(TERS), Coherent anti-Stokes Raman scattering (CARS), and Coherent anti-Stokes Raman scattering microscopy.

4. The method of claim 1 further comprising: subjecting the spectra to a two-dimensional correlation spectroscopy (2D CoS).

5. The method of claim 1, wherein statistical model is a regression model.

6. The method of claim 5, wherein the statistical model is prepared by Artificial neural network (ANN), Classical least squares (CLS), Locally weighted regression (LWR), Multiple linear regression (MLR), Designated experimental MLR, Multiway partial least squares (NPLS), Principle component regression (PCR), Partial least squares (PLS), or Support vector machine.

7. The method of claim 1, wherein the statistical model for determination of the age of a stain in the sample is prepared by Partial least squares discriminant analysis (PLS-DA), Linear discriminant analysis (LDA), Multivariate analysis of variance (MANOVA), Support vector machine (SVM), or Artificial neural network (ANN).

8. The method of claim 7 further comprising: using a clustering method for the preparation of the statistical model.

9. A method of establishing a statistical model for determination of an age of a body fluid stain in a sample, said method comprising:

  providing a plurality of modeling samples, each of the plurality of modeling samples containing a known type and a predetermined age of a modeling body fluid stain;

  subjecting each modeling sample or an area of each modeling sample containing the modeling body fluid stain to a spectroscopic analysis to produce a spectroscopic signature for each modeling sample, the spectroscopic signature for each modeling sample associated with the predetermined age of the body fluid stain; and

  establishing a statistical model for determination of the age of the body fluid stain in the sample based on said subjecting.

10. The method of claim 9, wherein a body fluid forming the body fluid stain is selected from the group consisting of blood, saliva, sweat, urine, semen, and vaginal fluid.

11. The method of claim 9 further comprising: subjecting the spectra to a two-dimensional correlation spectroscopy (2D CoS).

12. The method of claim 9, wherein the statistical model for determination of the age of the body fluid stain in the sample is for a specific type of stain.

13. The method of claim 9, wherein the statistical model for determination of the age of the body fluid stain in the sample is prepared by regression analysis.

14. The method of claim 13, wherein the statistical model is prepared by Artificial neural network (ANN), Classical least squares (CLS), Locally weighted regression (LWR), Multiple linear regression (MLR), Designated experimental MLR, Multiway partial least squares (NPLS), Principle component regression (PCR), Partial least squares (PLS), or Support vector machine.

15. The method of claim 9, wherein the statistical model for determination of the age of the body fluid stain in the sample is prepared by Partial least squares discriminant analysis (PLS-DA), Linear discriminant analysis (LDA), Multivariate analysis of variance (MANOVA), Support vector machine (SVM), or Artificial neural network (ANN).

16. The method of claim 15 further comprising: using a clustering method for the preparation of the statistical model.

17. The method of claim 9 further comprising validating the statistical model.

18. The method of claim 9, wherein spectroscopic analysis is Raman spectroscopy.

19. The method of claim 18, wherein the Raman spectroscopy is selected from the group consisting of resonance Raman spectroscopy, normal Raman spectroscopy, Raman microscopy, Raman microspectroscopy, NIR Raman spectroscopy, surface enhanced Raman spectroscopy (SERS), tip enhanced Raman spectroscopy (TERS), Coherent anti-Stokes Raman scattering (CARS), and Coherent anti-Stokes Raman scattering microscopy.

20. The method of claim 9, wherein the predetermined age of the modeling body fluid stain included in each of the plurality of modeling samples is selected from the group consisting of one (1) hour, three (3) hours, five (5) hours, eight (8) hours, 24 hours, 48 hours, 72 hours, 96 hours, 120 hours, and 168 hours.

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